

WPPSI-IV A&NZ

**Introduction
2014**

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What we'll cover today...

- What's new in the WPPSI-IV
- Australian & New Zealand adaptation & standardisation
- New Subtests & Materials
- New Scoring & Interpretative Procedures
- Technical Properties of the Tool
- Pricing & Resources

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Historical Perspective

- WPPSI 1967
- WPPSI-R 1989
- WPPSI-III AU 2004
- WPPSI-IV A&NZ 2014

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WPPSI-IV A&NZ Kit

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**WPPSI-IV
WHAT'S NEW...**

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Standard Revision Goals

- Update theoretical foundations
- Enhance clinical utility
- Increase developmental appropriateness
- Increase user friendliness
- Improve psychometric properties
 - Including extending floors and ceilings of the subtests so you get a better measure of ability for high and low functioning children
- Update Normative Data

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Reminder WPPSI-III

Two batteries:

- Ages 2:6–3:11
- Ages 4:0–7:3

Composite scores:

- Full Scale IQ (FSIQ)
- Verbal IQ (VIQ)
- Performance IQ (PIQ)
- Processing Speed Quotient (PSQ)
- General Language Composite (GLC)

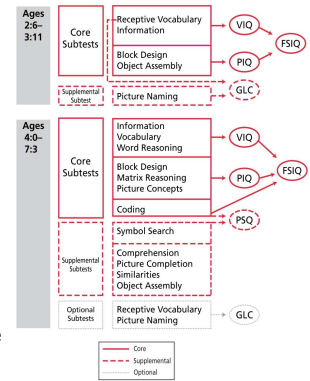
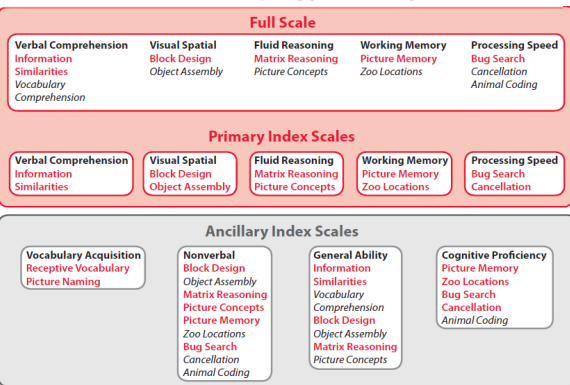


Figure 1.1. WPPSI-III Test Framework

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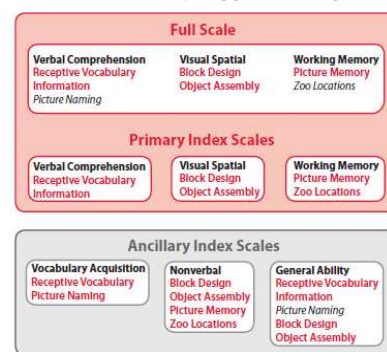
Test Structure (Ages 4:0-7:7)

core subtests listed in **red**; Supplementary in *italics*.



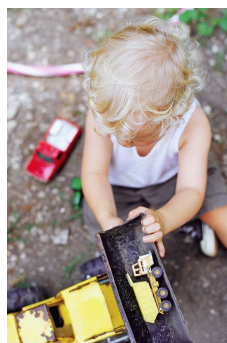
Test Structure (Ages 2:6 – 3:11)

core subtests listed in **red**; Supplementary in *italics*.



Increase Developmental Appropriateness

- Simplify instructions
- Demonstrate, practice, and teach the task
- Update Art
- Adapt test manipulatives
- Reduce fine motor demands



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Change Processing Speed Subtests



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Maintain or reduce testing time

- Maintain goal of ≤ 45 minutes for 2:6-3:11 and ≤ 60 minutes for 4:0-7:7
- Re-evaluate start points & discontinue rules; reduce number of final items

Table 2.2 WPPSI-IV^{A&NZ} Subtest Administration Times, by Age

Subtest	Ages					
	2:6-2:11	3:0-3:11	4:0-4:11	5:0-5:11	6:0-6:11	7:0-7:7
Primary Index Subtests	29	35	60	62	60	58
FSIQ Subtests	24	29	31	32	31	31

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New Discontinue Rules



Subtest	WPPSI-III	WPPSI-IV
BD	3	2
IN	5	3
MR	4 (4 of 5)	3
VC	5	3
PC	4	3
OA	3	2
CO	5	3
SI	4	3
PN	5	3
RV	5	3

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WPPSI-IV

A&NZ STANDARDISATION

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The A&NZ Standardisation Process

- The primary objective of the WPPSI-IV Australian and New Zealand standardisation project was to provide Australian and New Zealand norms based on a census-matched sample of children aged 2:6-7:7
- Prior to standardisation all test items were reviewed by a panel of Australian and NZ Psychologists for cultural appropriateness and adapted accordingly.
- The Australian 2011 census New Zealand 2006 census provided the basis for stratification according to the age, sex, parental education level, geographic region and indigenous status.

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The A&NZ Standardisation Process

- **N = 428** children (51.4% male) in **nine age groups**
- The sample was stratified by four **parental education levels** (years of schooling and further educational qualifications). The proportions reflected the parental education within the A&NZ population.
- **Geographic location** - Testing was carried out in all Australian states/territories and the N. and S. Islands of NZ, closely fitting with the distribution of the population at the time of the Census
- **Urbanicity** - The sample included children from both urban and rural areas across Australia and New Zealand.

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The A&NZ Standardisation Process

- **Indigenous status** - 21 Aboriginal and Torres Strait Islanders and 18 New Zealand Maori were included in the sample, 6.3% (population 4.8%) and 26.1% (population 23.5%) of the samples respectively.
- To ensure that the Australian and New Zealand norms were based on the full range of abilities within the population, 8 children with an intellectual disability (FSIQ ≤ 70) and 9 children identified as intellectually gifted (FSIQ ≥ 130) were included in the Australian and New Zealand sample to ensure approximately 2% of cases performed at the intellectually disabled level and 2% performed at the gifted level.

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A&NZ v USA? Demographically matched samples

	A&NZ		USA				
	Mean	SD	MEAN	SD	N	DIFF	Std DIFF
Younger Battery							
VCI	105.2	14.7	104.8	12.7	140	0.4	0.03
VSI	103.3	15.1	102.3	13.0	140	1.0	0.07
WMI	105.1	14.0	101.5	14.2	139	3.6	0.26
FSIQ	105.7	14.2	104.3	12.3	140	1.4	0.11
Older Battery							
VCI	98.7	14.3	101.9	14.0	270	-3.2	-0.23
VSI	102.8	15.2	100.1	14.4	270	2.7	0.18
FRI	100.3	16.5	100.1	13.8	269	0.2	0.01
WMI	104.9	15.0	99.6	14.2	268	5.3	0.36
PSI	102.5	16.1	100.5	15.0	258	2.0	0.13
FSIQ	101.2	15.2	100.8	14.0	265	0.4	0.03

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Change over time?

The Flynn Effect...

Composite	WPPSI-IV	WPPSI-III	r ¹²
VCI-VIQ	100.9	103.4	.84
VSI-PIQ	102.6	104.9	.71
FRI-PIQ	102.1	105.4	.76
PSI-PSQ	101.1	107.0	.65
FSIQ	101.7	105.0	.86
VAI-GLC	101.7	104.6	.85

http://www.ted.com/talks/james_flynn_why_our_iq_levels_are_higher_than_our_grandparents

n = 248 in US; ages 2:6-7:3

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WPPSI-IV SUBTEST SUBSTITUTION

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Summary of Substitution Rules

- **No** substitution of subtests on 2-subtest composites
- Only substitute permitted subtests when calculating composite scores composed of 4+ subtests
- Only substitute if subtest is spoiled or there is a necessary clinical reason
 - Determined a priori
- For composites where substitution permitted *only 1 is allowed*

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Subtest Substitution

Age Band	Composite Score	Core Subtest	Allowable Substitution
4:0-7:7	FSIQ	Information Similarities Block Design Matrix Reasoning Picture Memory Bug Search	Vocabulary or Comprehension Vocabulary or Comprehension Object Assembly Picture Concepts Zoo Locations Cancellation or Animal Coding
	NVI	Block Design Matrix Reasoning Picture Concepts Picture Memory Bug Search	Object Assembly — — Zoo Locations Cancellation or Animal Coding

*Substitution may introduce additional measurement error. Therefore, only one substitution is allowed for each listed composite score.

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Subtest Substitution

Age Band	Composite Score	Core Subtest	Allowable Substitution
4:0-7:7	GAI	Information Similarities Block Design Matrix Reasoning	Vocabulary or Comprehension Vocabulary or Comprehension Object Assembly Picture Concepts
	CPI	Picture Memory Zoo Locations Bug Search Cancellation	— — Animal Coding Animal Coding

*Substitution may introduce additional measurement error. Therefore, only one substitution is allowed for each listed composite score.

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A CLOSER LOOK AT THE SUBTESTS

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Verbal Subtests

Subtest	2:6-3:11	4:0-7:7
Information	C	C
Receptive Vocabulary	C	O
Picture Naming	S	O
Similarities		C
Vocabulary		S
Comprehension		S
<ul style="list-style-type: none"> – Acquired Knowledge – Verbal Reasoning – Verbal Concept Formation 		

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What's new?

- New picture items have been added to both Similarities and Comprehension to improve the floor of these subtests
- New verbal items on all other subtests.
- Minor language modifications / new items/ item order changes for A&NZ

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Similarities: Sample Item

"A bee and an ant are alike because they are both bugs. Which one here is a bug like these?"

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Comprehension : Item 4

"Show me the children who need help."

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Information: Example Changes

A&NZ Subtest Modification

Item 7. Additional item added: **Why should we wear sunscreen in the summer?**

Item 8. Reference to **University** added as 2 point response. **Math** changed to **Maths**

Item 11. Reference to **Vaccinations** and **Registration** added as 2 point response options

Item 13. Additional item added: **Why do we have names?**

Item 17. **Refrigerator** changed to **Fridge**

Item 21. **President** changed to **Prime Minister**

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Visual-Spatial Subtests

Subtest	2:6-3:11	4:0-7:7
Block Design	C	C
Object Assembly	C	S

- Visual-Spatial Processing
- Integration and Synthesis of Part-Whole relationships
- Attention to visual detail
- Nonverbal Concept Formation
- Visual-Motor Integration

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What's new?

- New items added to extend floors and ceilings for both subtests
- General administrative procedures and scoring remain the same

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Fluid Reasoning Subtests

Subtest	Ages 2:6-3:11	Ages 4:0-7:7
Matrix Reasoning	NA	C
Picture Concepts	NA	S

- Fluid and Inductive Reasoning
- Broad Visual Intelligence
- Simultaneous Processing; Conceptual Thinking
- Classification Ability

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What's new? Matrix Reasoning

- Only analogical reasoning items have been retained. The continuous and discrete pattern completion, classification, and serial reasoning item types were dropped, of which only a items existed, to allow effective and efficient teaching.

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What's New? Picture Concepts

- Picture Concepts includes 3 substantively revised and 5 new items. To eliminate inadvertent cues to the correct responses, much of the art is redrawn, and no art appears more than once on the subtest.

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NEW! Working Memory Subtests

Subtest	Ages 2:6-3:11	Ages 4:0-7:7
Picture Memory	C	C
Zoo Locations	S	S

- Visual Working Memory
- Visual-Spatial Working Memory
- Involves attention, concentration, mental control, and reasoning

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Why add Working Memory?

- Predicts academic achievement (e.g., reading comprehension, maths)
- Related to other abilities (e.g., language comprehension, attention, fluid reasoning)
- Sensitive to a variety of clinical conditions (e.g., ADHD, TBI)
- Most highly rated customer request

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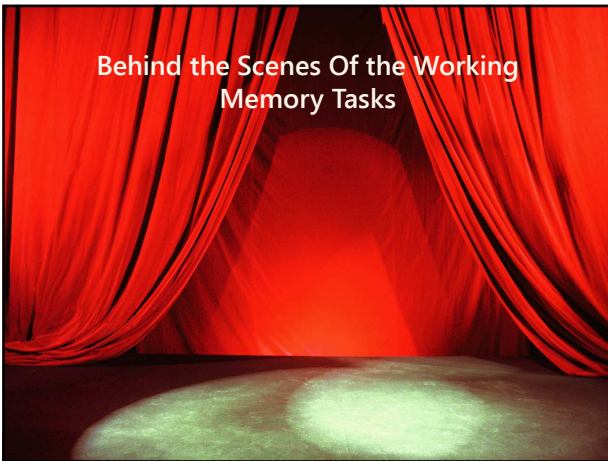
Working Memory in the WPPSI-IV

- Measuring working memory in children is methodologically challenging because children are more distractible, have limited working memory capacity and also have difficulty comprehending complex instructions.
- Children don't effectively use the kind of rehearsal and chunking strategies that would help them reproduce a sequence and at this age range, research shows that the correlations between STM tasks & ability are similar to complex span tasks & ability in older kids (Cowan et al., 2005)

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Behind the Scenes Of the Working Memory Tasks



Working Memory in WPPSI-IV

- The final measures were constructed based on paradigms described as alternatives for infant / toddler working memory research (Reznick et al. 2009)
- Both utilise proactive interference rather than sequencing, which is developmentally incongruent for young children. The subtests reuse stimulus across trials, so the child has to inhibit exposure to previous items in order to answer correctly in order to create the necessary cognitive processing demands for working memory subtests.

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Picture Memory

Materials

Administration and Scoring Manual
Record Form
Stimulus Book 2
Stopwatch

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Picture Memory Description

The child views a stimulus page of pictures for a specified time and then selects these pictures from options on a response page.

The Picture Memory subtest measures visual working memory using the familiarise-recognise paradigm, for which a set of stimuli is viewed and then recognised from among a set of responses.

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Picture Memory (PM)

- Core Working Memory subtest for ages 2:6–7:7.
- Includes 35 items.

Start Point	Reverse Rule	Discontinue
Ages 2:6–3:11: Sample A, then Item 1 Ages 4:0–7:7: Sample B, then Item 7 *Children suspected of intellectual disability, start with Sample Item A, then Item 1.	Ages 4:0–7:7: Imperfect score on <i>either</i> of the first two items given, administer preceding items in reverse order until 2 consecutive perfect scores are obtained.	All Ages: After 3 consecutive scores of 0.

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PM: Item Administration

Sample Item A

Expose Sample Item A stimulus page and say, ***Look at this picture.***

- Begin timing and allow 3 seconds.

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PM: Item Administration

Turn to Sample Item A response page and say, ***Point to the picture I just showed you.***

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PM: Sample B

- Expose Sample Item B stimulus page and say, ***Look at these pictures.***
 - Begin timing and allow 5 seconds.

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PM: Sample B

Turn to Sample Item B response page and say, ***Point to the pictures I just showed you.***

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General Directions

- If response incorrect on *Teaching* Items, show the stimulus page again and say ***"I showed you these pictures"***, turn to the response page and say ***"so you should point to these"*** and point to the correct option(s).
- (All Items) Child can point to pictures in any order.



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General Directions Cont'd



Sample A–Item 6: Expose stimulus page for 3 seconds.
Sample B–Item 35: Expose stimulus page for 5 seconds.

- The stimulus page for each item is exposed *only once*, except for the sample and teaching items (1,2,9,10).
Say: "I can't show you again. Just try your best"
- Choice(s) indicated by either pointing to or saying the letter(s) of the selected response option(s).
- If the child selects more than the required number of response options or self corrects, score only the intended response. If it is not clear Say: "Show/Tell me your answer again") (provide only once per item).
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Zoo Locations

Materials

Administration and Scoring Manual
Record Form
Zoo Locations Layouts
Zoo Locations Animal Cards
Stopwatch

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Zoo Locations: Description

The child views animal cards on a zoo layout for a specified time, and then places each card in the previously viewed location. (Observe-Perform: Reznick, 2009).

The Zoo Locations subtest measures visual-spatial working memory using the observe-perform paradigm, wherein some action or actions are observed and then repeated or reproduced.

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Zoo Locations (ZL)

- Supplementary for ages 2:6–7:7.
- Consists of 20 items.

Start Point	Reverse Rule	Discontinue Rule
Ages 2:6–3:11: Sample Item, then Item 1	Ages 6:0–7:7: Imperfect score on either of the first two items given, administer the items in reverse order until 2 consecutive perfect scores are obtained.	All Ages: After 2 consecutive scores of 0
Ages 4:0–5:11: Sample Item, then Item 1		
Ages 6:0–7:7: Sample Item, then Item 7		

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ZL: Sample Item–Trial 1

Position the layout for Sample-Item 2 in front of the child and say,
Let's go to the zoo.

Present the card according to the key and say, *The monkey lives here. Remember where the monkey lives.*

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ZL: Sample Item–Trial 1

Collect the card, hand it to the child, and say, *Put the monkey where it lives.*

Incorrect: Say "That's not quite right" [place card in correct location] "The monkey lives here, so you should put it here. Lets try again."

Administer Trial 2.



Item	Response	Score
Trial 1	Child	
S.		
Examiner		

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ZL: Item 13

Present the cards according to the key and say,
Remember where each animal lives.

Examiner View

Child View

Begin timing and allow 5 seconds.

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ZL: Item 13

Collect the cards, hand them to the child, and say, *Put each animal where it lives.*

Cards should be stacked in random order and handed to the child animal-side up.

This instruction may be shortened or eliminated when the child understands the task.

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General Directions

- The number & letter on the back of each card indicates the item number & presentation order.
- The cards should be stacked sequentially prior to administration, number & letter side visible to you.
- Animal Cards not being used should be placed out of the child's view
- Do not allow the child to touch the Animal Cards until you hand them to him or her.
- If the child turns a card animal-side down during the task, unobtrusively turn the card right-side up again.

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General Directions


- Self-corrections are allowed.
- There is no required sequence for placing the cards.
- The sample and Items 1 and 2 have two trials each.
- **Items 1–2 and 5–8 are teaching items.**
- During administration, prompts are provided if the child attempts to place:
 - multiple cards in a single location: **Only one animal lives in each place.**
 - a card between acceptable locations (e.g., in a green area), **The animals only live in the brown places (point).**

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Scoring

- The child is not penalised for placing cards in rotated orientations (e.g., the animal is upside down from his or her perspective). Credit should be awarded for correct placement of a card in any orientation.

For correctly placed cards, record a tick over the letter in the key.

Item	Response	Score
	Trial 1	
	Child	
S.		
	Examiner	

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NEW! Processing Speed Subtests

Subtest	Ages 2:6-3:11	Ages 4:0-7:7
Bug Search	NA	C
Cancellation	NA	S
Animal Coding	NA	S

- Ability to quickly and correctly scan or discriminate simple visual information.
- Short-term visual memory; visual-motor coordination; cognitive flexibility; visual discrimination; concentration.

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New Ink Dauber replaces pencil

All children practice using the ink stamper on the back cover of Response Booklet before proceeding to the demonstration items.



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New Processing Speed Subtests

Bug Search

- Child friendly adaptation of Symbol Search
- Child stamps the matching bug in each row for 120 seconds

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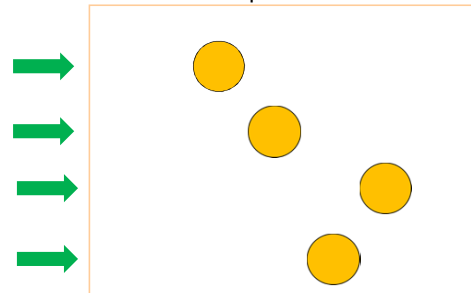
Start Point	Discontinue Rule	Timing
Ages 4:0–7:7: Dauber Practice, Demonstration Items, Sample Items, then Test Items	After 120 seconds	Begin timing after saying the last word of instruction. Stop timing when the child completes all of the test items or the time limit expires.

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Demonstration Items

Look at this bug.

When I find this bug over here, I stamp it.



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General Directions

When the child has successfully completed the sample items, say, **That's right. Now you know how to do them.** Proceed to Test Items.

Do not proceed with the test items until the child understands the task.

If child completes last item on a page before time limit expires, EXAMINER immediately turns page. Say, **Keep working as fast as you can.**

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General Directions

Prompts are provided if the child:

- Marks multiple bugs for a test item, point to the item and say, **Stamp only one bug.**
- Asks what to do if he or she makes a mistake, say, **That's OK. Just keep working as fast as you can.**
- Omits an item, point to the first omitted item and say, **Don't skip any. Do this one next.**

Provide no further assistance on this subtest except to remind the child to continue until told to stop

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Bug Search: Scoring

- A bug is judged as marked only if it is clear that the child intended to mark it. If a mark extends through an adjacent bug, only judge the adjacent bug as marked if clear that it was the child's intent. If a child marks in the white area near a bug, the closest bug should be judged as marked. If the closest bug cannot be determined, no bug should be judged as marked.

4. Bug Search

Start Ages 4:0-7:7
Quicker Practice, Demonstration Items, Sample Items, then Test Items

Time limit: 120 seconds

Discontinue After 120 seconds

Score Use the Bug Search Scoring Key to score the child's responses. Subtract Number Incorrect from Number Correct. If the total raw score is <0, enter 0 as the total raw score.

Completion Time: 120"

Number Correct: 45

Number Incorrect: 4

Bug Search Total Raw Score (Maximum = 66): 41

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New Processing Speed Subtests

Cancellation

- Child friendly version of WISC-IV task
- Targets are articles of clothing.
- Random & Structured items (45s each)

"Only stamp the things that people wear. Do not stamp anything else."

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Start Point	Discontinue Rule	Timing
Ages 4:0-7:7: Demonstration Item, Sample Item, then Item 1	After 45 seconds for each item.	Begin timing after saying the last word of instruction. Stop when the child completes the item, time limit expires, or it is clear from the child's words or gestures that s/he has finished.

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General Directions

- Explain and illustrate the task using the demonstration item.
- Allow the child to practice by completing the sample item.
- Proceed to Item 1 only when the child understands the task.

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General Directions

- Prompts are provided if the child asks what to do if s/he makes a mistake, say, **That's OK. Just keep working as fast as you can.**
- Provide no further assistance on this subtest except to remind the child to continue until told to stop (if necessary).
- Each page is administered separately completed pages are removed from the child's view and allowed to dry as subsequent pages are administered.

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Scoring

- Objects are judged as marked only if it is clear that the child intended to mark them. If a mark extends through an adjacent object, do not judge the adjacent object as marked unless it is clear that it was the child's intent.
- If a child marks in the white area near an object, the closest object should be judged as marked. If the closest object cannot be determined, no object should be judged as marked.

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Scoring

Score
Use the *Cancellation Scoring Template* to score the child's responses. Subtract Number Incorrect from Number Correct for each item score. If the item score is ≤0, enter 0 as the item score. The total raw score is the sum of the item scores.

8. Cancellation Time limit: 45 seconds

Start Ages 4-7:7
Demonstration item, Sample item, then item 1

Discontinue After 45 seconds for each item

Score Use the *Cancellation Scoring Template* to score the child's responses. Subtract Number Incorrect from Number Correct for each item score. If the item score is ≤0, enter 0 as the item score. The total raw score is the sum of the item scores.

Item	Completion Time	Number Correct	Number Incorrect	Item Score	
1.	45"	13	3	10	CAR (Max = 48)
2.	45"	13	2	11	CAS (Max = 48)
Cancellation Total Raw Score (Maximum = 96)					21

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New Processing Speed Subtests

Animal Coding

Child friendly adaptation of the Coding paired-associates task
Child stamps the shape that is associated with each animal for 120 seconds

"Stamp the shape that each animal likes best."

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Start Point	Discontinue Rule	Timing
Ages 4:0-7:7: Demonstration Items, Sample Items, then Test Items	After 120 seconds.	Begin timing after saying the last word of instruction. Stop timing when the child completes all of the items or the time limit expires.

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Item Administration – Demonstration

Look at these. Each animal has a shape it likes best. The cat likes the star, the turtle likes the circle, and the fish likes the square.

- Here's a fish. The fish likes the square so I stamp the square.
- Here's a cat. The cat likes the star so I stamp the star
- Here's a turtle. The turtle likes the circle so I stamp the circle



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General Directions

Children who mark more than one shape for an item on the Animal Coding subtest are reminded to mark only one shape for each animal.

If child completes last item on a page before time limit expires, **EXAMINER** turns page. Say, Keep working as fast as you can.



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General Directions

Prompts are also provided if the child:

- asks what to do if he or she makes a mistake, say, **That's OK. Just keep working as fast as you can.**
- omits an item, point to the first omitted item and say, **Don't skip any. Do this one next.**

Provide no further assistance on this subtest except to remind the child to continue until told to stop.

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Scoring



Score

Use the *Animal Coding Scoring Key* to score the child's responses.
Subtract Number Incorrect from Number Correct.
If the total raw score is ≤0, enter 0 as the total raw score.

12. Animal Coding

Time limit: 120 seconds



Start
Ages 4:0-7:7
Demonstration Items,
Sample Items, then Test Items



Discontinue
After 120 seconds



Score
Use the *Animal Coding Scoring Key* to score the child's responses.
Subtract Number Incorrect from Number Correct.
If the total raw score is ≤0, enter 0 as the total raw score.

Completion
Time

120"

Number
Correct

12

Number
Incorrect

3

Animal Coding Total Raw Score
(Maximum = 72)

= 9

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WPPSI-IV SCORING

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2. Q-Global

Q-global: Pearson's new
web-based platform for test
administration,
scoring &
reporting

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Interpretive \$5

Subscription:

\$45-\$55 p.a.

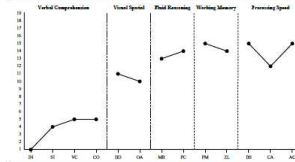
WPPSI-IV Q-global Platform
Version 1.0.0

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PRIMARY SUMMARY

Subtest Name	Total Raw Score	Scaled Score	Percentile Rank	Age Equivalent	SDM
Block Design	20	12	63	8.3	1.94
Information	12	10	63	8.3	1.94
Similarities	12	10	63	8.3	1.94
Picture Memory	12	10	63	8.3	1.94
Object Assembly	12	10	63	8.3	1.94
Block Design	20	12	63	8.3	1.94
Information	12	10	63	8.3	1.94
Similarities	12	10	63	8.3	1.94
Picture Memory	12	10	63	8.3	1.94
Object Assembly	12	10	63	8.3	1.94
Block Design	20	12	63	8.3	1.94
Information	12	10	63	8.3	1.94
Similarities	12	10	63	8.3	1.94
Picture Memory	12	10	63	8.3	1.94
Object Assembly	12	10	63	8.3	1.94

Subtest Scaled Score Profile



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WPPSI-IV PROFILE ANALYSIS

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Principles of Score Interpretation

1. Interpretation relies on both normative and ipsative analysis.
2. Composite scores are the primary level of analysis, because they are the most reliable and comprehensive representatives of a child's performance.
3. Examination of the composing parts helps clarify the meaning of the whole.
4. Interpretation should be flexible to the real constraints and problems of testing situations.
5. A single score alone should never be used alone to make decisions about a child.

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WPPSI-IV Record Form
Ages 4:0-7:7

Child's Name: **Child A**
Examiner's Name: **Examiner A**

Test Date: **2003** Year **12** Month **12** Day **25**
Birth Date: **2003** Year **4** Month **7** Day **18**
Test Age: **4** Year **7** Month **18** Day **18**

B Total Raw Score to Scaled Score Conversion

Subtest	Raw Score	Scaled Score
Block Design	20	12
Information	12	10
Similarities	12	10
Picture Memory	12	10
Object Assembly	12	10
Block Design	20	12
Information	12	10
Similarities	12	10
Picture Memory	12	10
Object Assembly	12	10
Block Design	20	12
Information	12	10
Similarities	12	10
Picture Memory	12	10
Object Assembly	12	10

C Sum of Scaled Scores to Composite Score Conversion

Scale	Scaled Score	Composite Score
Verbal Comprehension	12	10
Visual Spatial	10	10
Fluid Reasoning	10	10
Working Memory	10	10
Processing Speed	10	10

D Subtest Scaled Score Profile

E Composite Score Profile

New in the WPPSI-IV

- The approach to making comparisons between scores has been expanded to include S&W analysis at the primary index level as well as for subtests, reorganised to move from global to more specific comparisons, and improved to be more psychometrically sound.
- There are also four new ancillary index scores designed to help answer specific clinical questions

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PEARSON

Primary Analysis

Mean Difference Comparisons						Comparison Selections		
	Score	Comparison Score	Difference	Critical Value	Strength or Weakness	Base Rate		
Index Level	VCI	132	-109.2	22.8	8.11	S	W	1-2%
	VSI	112	-109.2	2.8	9.36	S or W		
	FRI	114	-109.2	4.8	8.55	S or W		
	WMI	97	-109.2	-12.2	9.36	S	W	10-25%
	PSI	91	-109.2	-18.2	11.46	S	W	5-10%
Subtest Level	Information	15	-11.6	3.4	2.64	S	W	2-5%
	Similarities	16	-11.6	4.4	1.90	S	W	2%
	Block Design	12	-11.6	.4	3.05	S or W		
	Object Assembly	12	-11.6	.4	2.36	S or W		
	Matrix Reasoning	12	-11.6	.4	2.25	S or W		
	Picture Concepts	13	-11.6	1.4	2.36	S or W		
	Picture Memory	10	-11.6	-1.6	2.44	S or W		
	Zoo Locations	9	-11.6	-2.6	2.81	S or W		
	Bug Search	9	-11.6	-2.6	2.90	S or W		
	Cancellation	8	-11.6	-3.6	3.63	S or W		5-10%

For mean difference comparisons, refer to Tables B.1, B.2, B.3, and B.4 of the WPPSI-IV Administration and Scoring Manual.

Comparison Selections

Comparison Score

Sum of Scaled Scores

MIS 546 ÷ 5 = 109.2

FSIQ

Critical Value Significance Level

.01 .05 ☒ .10 .15

Base Rate Reference Group

Overall Sample ☐ Ability Level ☒

Comparison Selections

Comparison Score

Sum of Scaled Scores for 10 Index Subtests

MSS-I 116 ÷ 10 = 11.6

MSS-F

Sum of Scaled Scores for 6 FSIQ Subtests

MSS-F ÷ 6 =

Critical Value Significance Level

.01 .05 ☒ .10 .15

Primary Analysis

Wherever possible, it is recommended that:

- Mean of Index Scores (**MIS**) is used for S&W analysis at the Index Level
- Mean of Subtest-Scaled Scores - Indexes (**MSS-I**) is used at the Subtest Level.

Primary Analysis

Mean Difference Comparisons						Comparison Selections		
	Score	Comparison Score	Difference	Critical Value	Strength or Weakness	Base Rate		
Index Level	VCI	132	-109.2	22.8	8.11	S	W	1-2%
	VSI	112	-109.2	2.8	9.36	S or W		
	FRI	114	-109.2	4.8	8.55	S or W		
	WMI	97	-109.2	-12.2	9.36	S	W	10-25%
	PSI	91	-109.2	-18.2	11.46	S	W	5-10%
Subtest Level	Information	15	-11.6	3.4	2.64	S	W	2-5%
	Similarities	16	-11.6	4.4	1.90	S	W	2%
	Block Design	12	-11.6	.4	3.05	S or W		
	Object Assembly	12	-11.6	.4	2.36	S or W		
	Matrix Reasoning	12	-11.6	.4	2.25	S or W		
	Picture Concepts	13	-11.6	1.4	2.36	S or W		
	Picture Memory	10	-11.6	-1.6	2.44	S or W		
	Zoo Locations	9	-11.6	-2.6	2.81	S or W		
	Bug Search	9	-11.6	-2.6	2.90	S or W		
	Cancellation	8	-11.6	-3.6	3.63	S or W		5-10%

For mean difference comparisons, refer to Tables B.1, B.2, B.3, and B.4 of the WPPSI-IV Administration and Scoring Manual.

Comparison Selections

Comparison Score

Sum of Scaled Scores

MIS 546 ÷ 5 = 109.2

FSIQ

Critical Value Significance Level

.01 .05 ☒ .10 .15

Base Rate Reference Group

Overall Sample ☐ Ability Level ☒

Comparison Selections

Comparison Score

Sum of Scaled Scores for 10 Index Subtests

MSS-I 116 ÷ 10 = 11.6

MSS-F

Sum of Scaled Scores for 6 FSIQ Subtests

MSS-F ÷ 6 =

Critical Value Significance Level

.01 .05 ☒ .10 .15

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Statistical Significance

A statistically significant difference between scores, for example between the VCI and Mean Primary Index Score (MIS), indicates that the likelihood of obtaining such a difference by chance is very low (e.g., $p < .05$) if the true difference between the scores is 0.

Critical Value Significance Level

.01 .05 ☒ .10 .15

Base Rate Reference Group

Overall Sample ☐ Ability Level ☒

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Base Rate Reference Group

Base rates provide a basis for estimating the rarity / commonness of an obtained difference within the normal population

Overall Sample

- VCI < VSI by 15 points = 14.9%
- VCI > VSI by 15 points = 14.1%
- WMI < PSI by 15 points = 18.2%
- WMI > PSI by 15 points = 17.6%

FSIQ ≤ 79

- VCI < VSI by 15 points = 10.8%
- VCI > VSI by 15 points = 9.4%
- WMI < PSI by 15 points = 5.7%
- WMI > PSI by 15 points = 20.7%

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Primary Analysis

Mean Difference Comparisons						Comparison Selections		
	Score	Comparison Score	Difference	Critical Value	Strength or Weakness	Base Rate		
Index Level	VCI	132	-109.2	22.8	8.11	S	W	1-2%
	VSI	112	-109.2	2.8	9.36	S or W		
	FRI	114	-109.2	4.8	8.55	S or W		
	WMI	97	-109.2	-12.2	9.36	S	W	10-25%
	PSI	91	-109.2	-18.2	11.46	S	W	5-10%
Subtest Level	Information	15	-11.6	3.4	2.64	S	W	2-5%
	Similarities	16	-11.6	4.4	1.90	S	W	2%
	Block Design	12	-11.6	.4	3.05	S or W		
	Object Assembly	12	-11.6	.4	2.36	S or W		
	Matrix Reasoning	12	-11.6	.4	2.25	S or W		
	Picture Concepts	13	-11.6	1.4	2.36	S or W		
	Picture Memory	10	-11.6	-1.6	2.44	S or W		
	Zoo Locations	9	-11.6	-2.6	2.81	S or W		
	Bug Search	9	-11.6	-2.6	2.90	S or W		
	Cancellation	8	-11.6	-3.6	3.63	S or W		5-10%

For mean difference comparisons, refer to Tables B.1, B.2, B.3, and B.4 of the WPPSI-IV Administration and Scoring Manual.

Comparison Selections

Comparison Score

Sum of Scaled Scores

MIS 546 ÷ 5 = 109.2

FSIQ

Critical Value Significance Level

.01 .05 ☒ .10 .15

Base Rate Reference Group

Overall Sample ☐ Ability Level ☒

Comparison Selections

Comparison Score

Sum of Scaled Scores for 10 Index Subtests

MSS-I 116 ÷ 10 = 11.6

MSS-F

Sum of Scaled Scores for 6 FSIQ Subtests

MSS-F ÷ 6 =

Critical Value Significance Level

.01 .05 ☒ .10 .15

- If you have used a supplemental subtest for the derivation of the FSIQ, additional measurement error has been introduced.
- MUST use the cv and base rate info for the core subtest to evaluate whether or not the supplemental subtest is a S/W.



Remember: The critical value and base rate used for this analysis are those for *Picture Memory*, since Zoo Locations was a substitute for PM in the derivation of the FSIQ.

Information						
Similarities						
Block Design						
Object Assembly						
Matrix Reasoning						
Picture Concepts						
Picture Memory		=				
Zoo Locations	9	-12.2	= -3.2	2.56	S or W	5-10%
Bug Search		=			S or W	
Cancellation		=			S or W	

Sum of Scaled Scores for
FSIQ Subtest

MSS = 73 ÷ 6 = 12.2

Critical Value Significance Level

01 05 10 .15

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- Represents general intellectual functioning, minimising language demands for children with special circumstances (e.g. ELL, ASD, deaf or hard of hearing).

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Expressive Language Disorder

Composite	Clinical Mean	Control Mean	Mean Diff.	p value	Std. Diff.
VCI	86.1	102.6	16.48	<.01	1.30
VSI	98.0	101.2	3.20	.38	.26
FRI	95.7	104.0	8.28	.03	.62
WMI	90.7	99.0	8.24	.02	.61
PSI	93.8	100.1	6.24	.07	.51
FSIQ	89.7	102.3	12.70	<.01	.99
VAI	92.4	102.0	9.56	<.01	.87
NVI	93.1	102.0	8.88	.01	.67
GAI	90.5	103.0	12.43	<.01	1.00
CPI	90.5	99.4	8.88	.01	.70

n = 25; ages 4:0-7:6

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Receptive-Expressive Language Disorder

Composite	Clinical Mean	Control Mean	Mean Diff.	p value	Std. Diff.
VCI	78.3	99.3	21.03	<.01	1.66
VSI	91.4	98.6	7.19	.02	.49
FRI	85.9	98.6	12.74	<.01	.93
WMI	89.0	100.8	11.78	<.01	.82
PSI	86.8	12.1	15.31	<.01	.95
FSIQ	79.5	98.9	19.38	<.01	1.51
VAI	81.8	99.4	17.64	<.01	1.28
NVI	84.1	99.3	15.19	<.01	1.07
GAI	78.8	98.3	19.49	<.01	1.52
CPI	86.3	101.9	15.59	<.01	1.02

n = 42; ages 4:0-7:6

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English Language Learners

Composite	Clinical Mean	Control Mean	Mean Diff.	p value	Std. Diff.
VCI	87.6	94.8	7.18	<0.01	.62
VSI	102.8	97.8	-5.00	.10	-.35
FRI	98.6	97.6	-1.00	.73	-.08
WMI	98.7	99.5	.85	.74	.07
PSI	104.0	100.6	-3.44	.23	-.27
FSIQ	95.2	96.8	1.64	.42	.14
VAI	88.5	93.4	4.97	.05	.36
NVI	100.6	98.2	-2.36	.35	-.20
GAI	92.5	95.2	2.61	.18	.24
CPI	102.4	100.9	-1.48	.55	-.12

n = 33; ages 2:7-7:6

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Ancillary Indexes

General Ability Index (IN, SI, BD, MR)

- Represents an individual's overall cognitive ability with reduced emphasis on working memory and processing speed
- e.g. what would I expect their ability to look like if working memory and processing speed abilities were similar to verbal and non-verbal abilities?

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Ancillary Indexes

Cognitive Proficiency Index (BS, CA, PM, ZL)

- Summary of the related skills of WM and PS, which provides a more comprehensive estimate of the efficiency with which cognitive information is processed in the service of learning, problem solving, & higher order reasoning.
- Proficient processing facilitates fluid reasoning and the acquisition of new material by reducing the cognitive demands of novel or higher order tasks.

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When to use the GAI

The GAI was developed primarily to aid in the identification of relative S&W that are based on comparisons between general ability and other cognitive functions.

- Children with neurodevelopmental disorders that impact WM/PS may obtain lower FSIQ scores than those without such difficulties, and in these situations, comparisons to FSIQ may mask meaningful differences between ability and other areas (e.g. memory, achievement).
- GAI provides a different perspective, different results... potential vs. memory/achievement

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When to use the GAI/CPI

In general, consider deriving and interpreting the GAI and the CPI when there is unusual variability in the domains or subtests that contribute to FSIQ.

Primary Analysis						
Index Level	Mean Difference Comparisons					
	Score	Comparison Score	Difference	Critical Value	Strength or Weakness	Base Rate
VCI	132	109.2	22.8	8.11	S or W	1-2%
VSI	112	109.2	2.8	9.36	S or W	
FRI	114	109.2	4.8	8.55	S or W	
WMI	97	109.2	-12.2	9.36	S or W	10-25%
PSI	91	109.2	-18.2	11.46	S or W	5-10%
Information	15	11.6	3.4	2.64	S or W	2-5%
Similarities	16	11.6	4.4	1.99	S or W	2%

Analysing the GAI/CPI

- Compare FSIQ to GAI to evaluate the impact of a weakness in cognitive proficiency on the child's overall cognitive functioning (NB: Small differences may be meaningful because of the relative similarity of FSIQ & GAI in the WPPSI of WISC/WAIS)
- Compare GAI and CPI to provide additional information about the possible impact of basic processing deficits on overall ability.

Pearson Difference Comparisons						
Index Level	Comparison Selections					
	Comparison	Score 1	Score 2	Difference	Critical Value	Significant Difference
GAI - FSIQ	GAI	124	FSIQ	117	7	3.16
GAI - CPI	GAI	124	CPI	92	32	8.16

Note...

While the predicted patterns of cognitive strengths and weaknesses of the special groups are reflected in the GAI/CPI results for the special group studies in Chapter 5, the findings suggest that the differences between general ability and cognitive proficiency for children with clinical conditions may not be as pronounced as those for older children & adults ...

- ? Not yet apparent but gap may widen
- ? Differential sensitivity of VMWI and AWMI to clinical disorders
- ? Less confounding influence of fine motor in the WPPSI-IV

Process Analysis

Comparison Selections						
Process Level	Critical Value Significance Level					
	.01	.05	.10	.15		
Receptive Vocabulary - Picture Naming	RV	PN	=		Y or N	
Cancellation Random - Cancellation Structured	CAR	CAS	=		Y or N	

For index-level comparisons, refer to Tables D.4 and D.5 of the WPPSI-IV Technical and Interpretive Manual.
For subtest- and process-level comparisons, refer to Tables B.7 and B.8 of the WPPSI-IV Administration and Scoring Manual.

WPPSI-IV TECHNICAL PROPERTIES

Reliability

Internal Consistency

- Average reliability coefficients for the subtests range from .71 (CA) to .92 (SI, VC, MR), and from .85 (PSI) to .95 (FSIQ) for the composite scales.

Test-Retest Stability

- Test-retest intervals from 14 days to 42 days, mean 31 days.
- The average corrected stability coefficients for subtests range from .46 (ZL) to .82 (AC).
 - In the US study, ZL and OA had acceptable stability coefficients (0.71; 0.78)
- The composite scores range from .70 (WMI) to .88 (GAI).

Validity

Correlations with the WPPSI-III Australian

- 44 children, testing interval 14 days to 50 days, mean 32 days. WPPSI-IV^{A&NZ} was administered first.
- Corresponding WPPSI-III composite scores were consistently, in the direction and at the magnitude expected given the combined impact of the Flynn effect and practice effects.
- The corrected correlation coefficients for the corresponding composites ranged from .69 (PSI-PSQ) to .91 (FRI-PIQ). These results are highly consistent with those observed in the US study comparing the WPPSI-III and WPPSI-IV.

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Validity

Correlations with the WISC-IV Australian

- 28 children with a testing interval of 14 days to 42 days, mean interval of 34 days. WPPSI-IV^{A&NZ} administered first.
- Comparable WISC-IV composite scores were consistently higher, in the direction and magnitude expected given the combined impact of the Flynn effect and practice effects.
- The corrected correlation coefficients for corresponding composites ranged between .52 (WMI) to .83 (VSI); the FSIQ corrected correlation is .87. These results are highly consistent with those observed in the US study comparing the WPPSI-IV and WISC-IV.

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Other Reliability & Validity Studies

Equating Studies

- DAS-II, Bayley-III

Concurrent Validity Studies

https://www.pearsonclinical.com.au/files/wppsi4_supp_dkm_R4_FNL.pdf

- NEPSY-2 subtests
 - Social Perception, Memory, Preliteracy and Inhibition
- BASC-2 Scales
 - Attention Problems, Emotional Control, & Executive function scales

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Special Group Studies

Intellectually Gifted

Intellectual Disability-Mild Severity

Intellectual Disability-Moderate Severity

Developmental Delay-Cognitive *

Expressive Language Disorder

Mixed Receptive-Expressive Language Disorder

English Language Learners *

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Special Group Studies

Autistic Disorder

Asperger's Disorder

Developmental Risk Factors *

Preliteracy Concerns *

Attention-Deficit/Hyperactivity Disorder

Disruptive Behavior *

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WPPSI-IV

PRICING, OTHER RESOURCES

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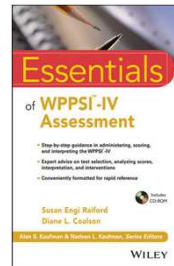
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Price Comparison

	WPPSI-IV	WPPSI-III
Kit	\$2470 (<i>\$303 less</i>)	\$2773
Record Forms	\$110-160 (<i>\$40-89 less</i>)	\$150-249
Response Books (Core)	\$200 (<i>\$2.00 more</i>)	\$198
Per Assessment:		
2:6-3:11	\$4.40	\$6
4:0 - 7:11	\$14.40	\$17.88
Software	\$3 / \$5 each	\$350/ \$750

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Post-Publication Activities



- *WPPSI-IV Essentials* book – Published!
- Q-interactive equivalence research
- Guidelines for using the WPPSI-IV with children who are deaf or hard of hearing

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Thanks!



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"The WPPSI-IV is no one's kid brother or sister. This newest version stands tall alongside the WISC-IV and WAIS-IV in every way imaginable – technical excellence, clinical utility, innovativeness, theoretical basis, and societal relevance."

"Bottom line: The WPPSI-IV is an amazing work of measurement for young children."

-- Alan S. Kaufman and Nadeen L. Kaufman
Yale Child Study, School of Medicine

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